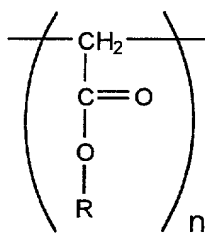


What is Claimed is:

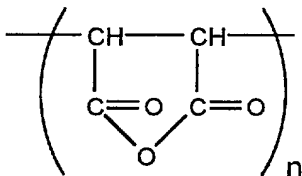
1. A gel electrolyte in which nonaqueous electrolyte solution obtained by dissolving electrolyte salt containing Li in a nonaqueous solvent is gelled by a matrix polymer including a copolymer as a main component which contains vinylidene fluoride as a monomer unit, wherein at least one kind of structure selected from structures formed by esterifying a part or all of a carboxyl group or a carboxylic acid, or an acetic anhydride structure is introduced into said copolymer.

2. The gel electrolyte according to claim 1, wherein a structure expressed by a chemical formula 1 and/or a chemical formula 2 shown below (here, R indicates any one selected from the group consisting of H, CH₃, C₂H₅, C₃H₇, C₄H₉, and C₅H₁₁) is introduced into said copolymer.

[Chemical Formula 1]

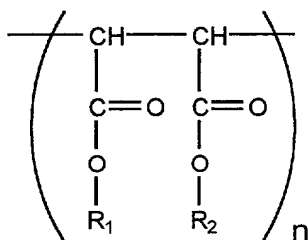


[Chemical Formula 2]

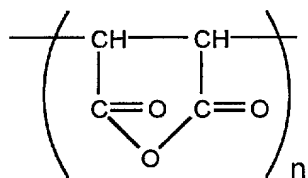


3. The gel electrolyte according to claim 1, wherein a structure indicated by a chemical formula 3 and/or a chemical formula 4 (here, R_1 and R_2 respectively designate any one selected from the group consisting of H, CH_3 , C_2H_5 , C_3H_7 , C_4H_9 , and C_5H_{11}) is introduced into said copolymer.

[Chemical Formula 3]



[Chemical Formula 4]



4. The gel electrolyte according to claim 3, wherein said copolymer includes at least one kind of material selected from the group consisting of maleic acid, ester maleate and maleic anhydride as a monomer unit and at least one kind of structure selected from structures obtained by esterifying a part or all of the carboxyl group or the carboxylic acid or the acetic anhydride structure is introduced into said copolymer.

5. The gel electrolyte according to claim 4, wherein at least one kind of material selected from the group consisting of the ester maleic acid, the maleate and the maleic anhydride is copolymerized with vinylidene fluoride so as to locate the monomer unit ratio relative to vinylidene fluoride within a range of 25/10000 to 30/1000.

6. The gel electrolyte according to claim 1, wherein said copolymer includes hexafluoropropylene as the monomer unit.

7. The gel electrolyte according to claim 1, wherein molecular weight of said copolymer ranges from 0.8 dl/g to 3.0 dl/g on the basis of an intrinsic viscosity notation.

8. A nonaqueous electrolyte battery comprising:

an anode;

a cathode; and

a gel electrolyte in which nonaqueous electrolyte solution obtained by dissolving electrolyte salt containing Li in a nonaqueous solvent is gelled by a matrix polymer including a copolymer as a main component which contains vinylidene fluoride as a monomer unit, wherein at least one kind of structure selected from structures formed by esterifying a part or all of a carboxyl group or a carboxylic acid

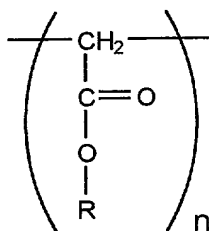
or an acetic anhydride structure is introduced into said copolymer.

9. The nonaqueous electrolyte battery according to claim 8, wherein said anode includes at least one kind of carbon material selected from the group consisting of lithium metal, lithium alloy and a carbon material capable of being doped/dedoped with lithium.

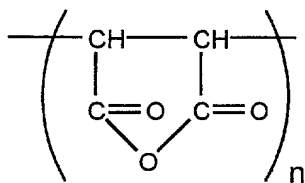
10. The nonaqueous electrolyte battery according to claim 8, wherein said cathode includes a composite oxide consisted of lithium and transition metals.

11. The nonaqueous electrolyte battery according to claim 8, wherein a structure expressed by a chemical formula 5 and/or a chemical formula 6 shown below (here, R indicates any one selected from the group consisting of H, CH₃, C₂H₅, C₃H₇, C₄H₉, and C₅H₁₁) is introduced into said copolymer.

[Chemical Formula 5]

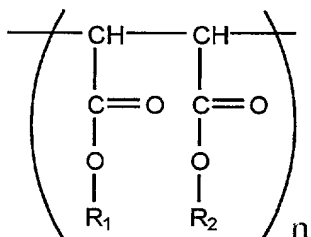


[Chemical Formula 6]

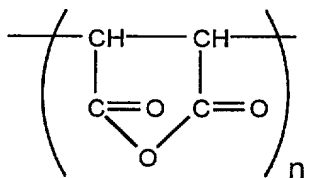


12. The nonaqueous electrolyte battery according to claim 8, wherein a structure indicated by a chemical formula 7 and/or a chemical formula 8 (here, R₁ and R₂ respectively designate any one selected from the group consisting of H, CH₃, C₂H₅, C₃H₇, C₄H₉, and C₅H₁₁) is introduced into said copolymer.

[Chemical Formula 7]



[Chemical Formula 8]



13. The nonaqueous electrolyte battery according to claim 12, wherein said copolymer includes at least one kind of material selected from the group consisting of ester maleic acid, maleate and maleic anhydride as a monomer unit and at least one

kind of structure selected from structures obtained by esterifying a part or all of the carboxyl group or the carboxylic acid, or the acetic anhydride structure is introduced into said copolymer.

14. The nonaqueous electrolyte battery according to claim 13, wherein at least one kind of material selected from the group consisting of the ester maleic acid, maleate and maleic anhydride is copolymerized with vinylidene fluoride so as to locate a monomer unit ratio relative to vinylidene fluoride within a range of 25/ 10000 to 30/1000.

15. The nonaqueous electrolyte battery according to claim 8, wherein said copolymer includes hexafluoropropylene as a monomer unit.

16. The nonaqueous electrolyte battery according to claim 8, wherein the molecular weight of said copolymer ranges from 0.8 dl/g to 3.0 dl/g on the basis of an intrinsic viscosity notation.